content. It has numerous color plates, expensive to produce and utterly unnecessary; most lovingly reproduce all the flaws in series of badly-mounted Monarchs to no obvious purpose. How typical! What a pity!—*Arthur M. Shapiro, Department of Zoology, University of California, Davis, California 95616.*

LITERATURE CITED

Ackery, P. R. and R. I. Vane-Wright. 1984. Milkweed Butterflies. Cornell University Press, Ithaca, New York, 426 pp.

J. New York Entomol. Soc. 96(4):481–482, 1988

The Butterflies of Indiana.—Ernest M. Shull. 1987. Indiana University Press, viii + 262 pp., 50 pls. $25.00 cloth.

In the past several years there have been a number of publications on the butterflies of various states, and more are to be published. Some leave quite a bit to be desired, while others stand out as examples of how these should be done. Shull's work on the Indiana fauna definitely falls in the latter category, and is perhaps the best state compendium that I have seen.

The introduction includes sections on the biogeographical areas of Indiana (with an accompanying map), biology in the broad sense (including color patterns, mimicry, migration, and the sap-feeding species), collecting, classification and identification (plus a list of the major museums and collections in North America), plus conservation and the endangered species act. The bulk of the book is taken up with the species accounts, giving diagnoses, distribution (having a state map showing the counties in the margin beside each species) and habitat, plus life history notes. Food plants are given for each species where known; these are not restricted to just Indiana. Shull has spent some three decades collecting in Indiana, and so he is well qualified to comment on the occurrence, nectaring, and flight habits; he lists every pair of mating butterflies he has observed, complete with locality, time and temperature data. These observations add welcome information for the 149 species known to fly in Indiana.

Interspersed in the text are the colored photographic plates that show every species of skipper and true butterfly; 535 specimens are illustrated, with both sexes and the under surface of the wings usually being given. In general, the color work is excellent; in a few cases the red appears to be a bit too strong, and there are a few small dark spots on a number of the plates.

At the end is a check list of the species, a "hypothetical list" of butterflies that may show up in the state (one more possible addition might be *Phyciodes pascoensis/morpheus*), a short glossary, the literature cited, and separate indices to food plants and the butterflies.

A couple of minor errors might be pointed out, such as "genuses" in the caption for figure 4, and Shull's statement that the Cabbage White is the only Indiana butterfly that has been found in all 92 counties, although its presence is not indicated on the accompanying map for De Kalb County.

The entire book is on heavy coated paper. With all the information it contains, with all the color photographs, and with its inexpensive price, this book is definitely a bargain. Shull and the Indiana Academy of Sciences are to be congratulated on a job well done.—*Frederick H. Rindge, Department of Entomology, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024.*

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Taxonomy, Phylogeny, and Biogeography of *Asterocampa* Röber 1916 (Lepidoptera, Nymphalidae, Apaturinae).—Tim Friedlander. *Journal of Research on the Lepidoptera,* 31 Dec. 1987 25(4):215–338, 13 figures, 11 tables, 22 plates. Available % Santa Barbara Museum of Natural History, 2559 Puesta Del Sol Road, Santa Barbara, California 93105.

This is an important work for lepidopterists, systematists and biogeographers because of the variety of data sources and methods used to determine results. Friedlander's study comprises an entire issue of the *Journal of Research on the Lepidoptera* in monographic format.

Friedlander's work, refined from his 1985 doctoral dissertation at Texas A&M University, is essentially a completion of research originally initiated by the late Dr. Walfried J. Reinthal of Tennessee. Reinthal studied *Asterocampa* ("Hackberry Butterflies") for many years, hand-pairing, rearing and cross-pairing many of the Nearctic taxa. As Friedlander notes, results of Reinthal's work (communicated mostly through correspondence) were widely cited by lepidopterists in systematic and faunal studies. The meticulously catalogued Reinthal collection (willed to the Carnegie Museum of Natural History) served as a major reference in Friedlander's research. The time elapsed in the Reinthal and Friedlander studies can be illustrated by my mentioning that twenty-four years ago I sent live ova to Reinthal for rearing and cross-pairing of the western Great Plains *Asterocampa*!

Rarely in works concerning Lepidoptera (or entomology in general) is cladistic methodology applied to data including (i) morphology of adults *and* immature stages, (ii) life histories and foodplant relations, (iii) behavior, (iv) cross-pairing/rearing experiments and (v) biogeographic data. Revisionary works normally utilize some of these data; then workers debate what alternative results might have been possible with more data. Consequently, in recent years, no other issue has divided lepidopterists more than morphological versus biological species definitions and how to apply the obligatory categories of the Code of the International Commission on Zoological Nomenclature. Thus, as an example of how such various data sources affect a cladistically-based revisionary study, the *Asterocampa* monograph is a seminal work. Friedlander is aware of this, amply addressing how various data bases, and methodological views, might affect the study. There is no particular prejudice in how he proceeds.

The monograph treats a relatively small monophyletic group. Four species are recognized, with a distribution including the Nearctic plus Mexico and the Antilles. For butterflies, the group is particularly non-vagile. *Asterocampa* are well documented "perching" (versus "patrolling") species, with adults notably restricted to foodplant